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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,348	08/29/2003	Franklin J. Wall JR.	LUM-03-06-10	1306

32566 7590 01/04/2007  
PATENT LAW GROUP LLP  
2635 NORTH FIRST STREET  
SUITE 223  
SAN JOSE, CA 95134

EXAMINER
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FARAHANI, DANA

ART UNIT	PAPER NUMBER
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2891

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/652,348	<b>Applicant(s)</b> WALL, FRANKLIN J.	
	<b>Examiner</b> Dana Farahani	<b>Art Unit</b> 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-9, 14, 16, 17, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan (US Patent 4,566,170), newly cited.

Regarding claims 1, 7-9, 16, 17, and 23, Dolan discloses, fig. 2, a structure comprising:  
a semiconductor light emitting device (LED) 18;  
a substrate comprising a ceramic core 12 and at least one copper layer 14 overlying the core;  
wherein the LED is electrically connected to the at least one copper layer and wherein a path from the at least one copper layer to the ceramic core is thermally conductive.

Dolan does not expressly disclose the copper layer having a thickness of at least 4, or between 4-24 mils. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the layer having such a large thickness in order to adjust the heat radiating properties of the layer.

Regarding claim 3, the ceramic core is Al<sub>2</sub>O<sub>3</sub> (see col. 2, line 29).

Regarding claim 4, at least one lead 24 is connected to the substrate.

Regarding claim 5, at least one solder pad 20 is connected to the substrate (figure 3).

Regarding claim 6, at least one terminated wire 24 is connected to the substrate.

Regarding claim 14, a base, a copper layer other than the one discussed above, is connected to the substrate.

3. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1 above, and further in view of Applicant's Admitted Prior Art (AAPA).

Dolan discloses the limitations in the claims, but does not disclose the light-emitting element has a III-nitride light-emitting layer.

AAPA discloses that III-nitride light emitters are known and used in the art (paragraph 2) and further discloses a silicon ESD protection integrated circuit 2 is formed beneath the LED 1 (see fig. 1, and paragraph 3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a III-nitride type light emitter layer, in order to emit any color of desired light (i.e. UV-red) or combinations thereof (e.g. white).

4. Claims 10-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1 above, and further in view of Whitworth et al., hereinafter Whitworth (US Patent 6,642,550).

Regarding claims 10-13, Dolan substantially discloses the limitations in the claim, as discussed above, except for a second substrate layer between the copper substrate and the light emitting device.

Whitworth discloses in figure 3, a LED in figure 4; wherein light emitting device 310 has a ESD silicon substrate 380, with bond pad 370 and insulator silicon nitride 730 (fig. 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use another substrate along with the corresponding light emitting devices to protect the LEDs of the Dolan's reference from electrostatic discharge.

Regarding claim 15, Whitworth discloses the package 350 has a lens section on the top.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a lens on the LEDs of the Dolan reference to affect the emitted light rays.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1 above, and further in view of Kobayashi et al., hereinafter Kobayashi (US Patent Application Publication 2004/0017005).

Dolan substantially discloses the claimed invention, as discussed above, except for the copper and the ceramic core are directly bonded.

Kobayashi discloses that copper direct bonding to a ceramic layer is known (see paragraph 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to directly bond the copper layer of the Dolan reference to the ceramic core therein to save cost.

#### ***Product-by-Process Limitations***

A comparison of the recited process with the prior art process does NOT serve to resolve the issue concerning patentability of the product. *In re Fessman*, 489 F2d 742, 180 USPQ 324 (CCPA 1974). Whether a product is patentable depends on whether it is known in the art or it is obvious, and is not governed by whether the process by which is made is patentable. *In re Klug*, 333 F2d 905, 142 USPQ 161 (CCPA 1964). In an ex parte case, product by process claims are not constructed as being limited to the product formed by the specific process recited. *In re Hirao et al.*, 535 F2d 67, 190 USPQ 15, see footnote 3 (CCPA 1976). Therefore, in claims 7 and 17, the process of bonding (or in case of claim 7, the method which is used in bonding) the copper layer to the core is given less patentable weight.

#### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-17, 23 and 24 have been considered but are moot in view of the new grounds of rejection.

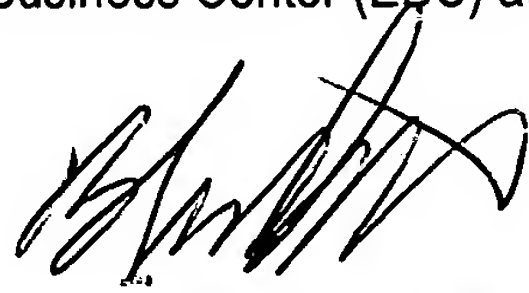
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DF



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